

中国电动汽车基础设施 发展情况介绍

Introduction of the Infrastructure for EV in China



中国电力科学研究院
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电动汽车基础设施现状

The situation of EV infrastructure

- 应用情况 **Applications**
- 充电方式 **Charging Mode**
- 运营模式 **Business Operation Mode**
- 研究成果 **Research and Production**
- 已有标准 **Existing Standard**

应用情况 Applications



北京121路充电站
Beijing bus 121
charging station

■ 集团用户自建充电站

The charging station built by EV group user

- 公交、电力、环卫等集团用车
for bus, engineering automobile, sanitation vehicle
- 集中充电、电池更换
charge in concentration, battery exchange



上海11路公交充电
Shanghai bus 11 charging



杭州Y9路电池更换
Hangzhou bus Y9 Battery
exchanging



电力客服车充电站
Electric service vehicle
charging station

应用情况 Applications

■ 小型乘用车充电设施

The charging infrastructure for passenger car

- 交流充电桩、快速充电站
AC charging spot, fast charging station





应用情况 Applications

■ 奥运电动汽车充电站

EV charging station for Olympics

- 电池快速更换

possesses the ability of battery exchange rapidly

- 服务50辆公交车 **works for 50 EV buses**

- 240台9kW充电机

240 chargers with the output 9kW





充电方式 Charging Mode

- 常规充电 normal charge
- 快速充电 fast charge
- 电池更换 battery exchange
- 车载充电 on-board charge
- 超级电容快充模式

Specialized fast charging mode for super capacitor



运营模式

Business Operation Mode

- 集团自建 Self-prepare by the EV user
 - 北京、上海公交
Beijing and Shanghai Bus Cop.
 - 电力公司
State Grid Corporation of China
 - 北京环卫
Beijing Environment Sanitation Bureau
- 运营公司 **professional operation company**
 - 杭州、武汉 **Hangzhou、Wuhan**

研究成果 Research and Production

■ 3~100kW系列充电机

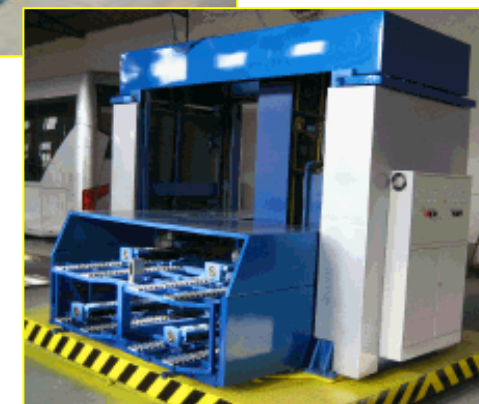
A series of chargers (3~100kW)

■ 充电监控系统

Monitoring system for charging

■ 电池更换系统

Battery exchange system



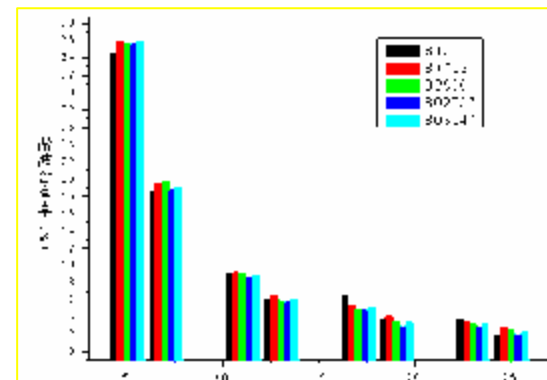
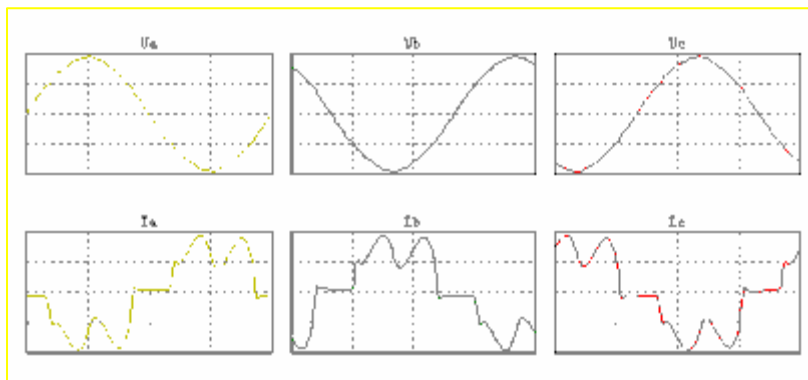


研究成果

Research and Production

电动汽车充电站供充电系统相互影响研究，完成奥运公交电动车充电站测试工作。

Completed the research on mutual effects between charge station and power system and accomplished the test of EV charger used in the Olympics.



研究成果

Research and Production

- 电动汽车示范运行监控系统和车载终端, 已安装在部分示范运行的电动汽车上, 收集充电和电量数据。

EV operation Monitoring system and on-board terminals have been installed in EV pilot units, which can acquire charging data.





已有标准 Existing Standard

- 我国已发布电动汽车基础设施相关标准11项，其中国标5项，国网企标6项。

There are about 11 standards related to EV infrastructure, including 5 national standards and 6 enterprise standards of State Grid Corporation of China.

下一步工作 Future work



示范运行配套设施建设

我国政府将于2009年至2012年在13城市推动大规模电动汽车商业化示范运行，纯电动汽车（含PHEV）将达万辆规模，为其进行配套设施建设。

Infrastructure construction for EV demonstration

Large-scale EV commercial demonstration will be developed from 2009 to 2012 in 13 representative cities of China. Tens of thousand EV and PHEV should be used by then. The construction of EV Infrastructure will be the most important work in future.





下一步工作 Future work

- 探索商业运营模式

Seeking business operation mode

- 车辆运营者自建

Self-prepare mode

- 能源运营公司

Support by power utility mode

- 政府民间合作模式（特许经营权）

Public Private Partnership mode



下一步工作 Future work

- **深入技术研究 Further technical research**
 - 公共分散式充电：计量计费、快速充电
Public distributed charge: billing system、fast charging technology
 - 集约化充电，电池梯次利用技术
Concentrated charging technology and Cascade application of battery
 - 电动汽车与智能电网双向能量转换技术
Vehicle to grid technology (V2G)
 - 电动汽车与可再生能源相结合的柔性充电
EV flexible charging by renewable energy resources



下一步工作 Future work

- **标准体系建设 standard system construction**
 - 充电机相关标准 **charger standard**
 - 充电接口标准 **charging interface standard**
 - 充电站相关标准 **charging station standard**
 - 动力电池系统相关标准 **battery system standard**
 - 计量计费相关标准 **measuring and billing standard**



下一步工作 Future work

■ 国际交流合作 **International Cooperation**

□ 关键技术研究

Study on key technology

□ 运营模式探讨

Research about business operation mode

□ 相关标准制订

Establishment about related standards



THANKS!

